

REMARKS

Claims 1 and 3-11 are pending in the application. Claim 2 has been canceled. New claim 11 has been added.

Claim Objections

Claims 1 and 3-5 have been objected to because of some informalities.

Claims 1 and 6 have been amended to overcome these objections.

In view of this, the Examiner is respectfully requested to reconsider and withdraw these objections.

Embodiments of the Present Invention

An embodiment of the present invention is directed to a double-sided printing machine that includes: a printing unit for printing opposite faces of a sheet-like material; ink supply means for supplying ink to the printing unit, the ink supply means being supported to be brought into contact with and separated from the printing unit; a delivery pile, provided downstream of the printing unit, for collecting the sheet-like material; and transport means for transporting the sheet-like material from the printing unit to the delivery pile while holding the sheet-like material.

The transport means includes, a first delivery chain passing through a lower side of the ink supply means, a second delivery chain provided above the delivery pile, a plurality of transport cylinders for transporting the sheet-like material from the first

delivery chain to the second delivery chain and provided at a position higher than the first delivery chain and lower than the second delivery chain. The plurality of transport cylinders include a first transport cylinder and a second transport cylinder provided adjacent to the delivery pile and arranged in zigzag fashion with respect to a vertical direction.

The double-sided printing machine further includes: first detection means for detecting a status of printing on one face of the sheet-like material when the sheet-like material is transported by the first transport cylinder; and second detection means for detecting a status of printing on the other face of the sheet-like material when the sheet-like material is transported by the second transport cylinder.

Another embodiment of the present invention is directed to a quality inspection apparatus for a double-sided printing machine that includes: a printing unit for printing on first face and a second face, opposite to the first face, of a sheet-like material; ink supply means, adapted to be in contact with the printing unit, for supplying ink to the printing unit; a delivery pile, disposed downstream of the printing unit, for accumulating the sheet-like material; transport means for transporting the sheet-like material from the printing unit to the delivery pile while holding the sheet-like material.

The transport means includes, a first delivery chain passing through a lower side of the ink supply means, a plurality of transport cylinders, disposed near the delivery pile, for transporting the sheet-like material from the first delivery chain, a second delivery chain for transporting the sheet-like material from the plurality of transport cylinders to the delivery pile.

The plurality of transport cylinders includes at least a first transport cylinder, a second transport cylinder disposed downstream of the first transport cylinder in a direction of transport of the sheet-like material, and a third transport cylinder located downstream of the second transport cylinder in the direction of transport of the sheet-like material so as to be opposed to and in contact with the second transport cylinder.

The a quality inspection apparatus also includes first detection means for detecting a status of printing on the first face of the sheet-like material when the sheet-like material is being transported by the first transport cylinder; and second detection means for detecting a status of printing on the second face of the sheet-like material when the sheet-like material is being transported by the second transport cylinder.

Claim Rejections - 35 U.S.C. § 103

(a) Claims 1, 3, and 6-8 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Funada (JP 01316268) in view of

Uno et al. (USP 4,448,121) and Reinhard et al. (USP 6,192,140). This rejection is respectfully traversed.

Funada discloses a double-sided offset printing machine 1 that includes, a printing unit 30, ink units 35 and 36 that are moveable toward and away from the printing unit 30, and chain 22 that discharges printed sheets to a paper discharge unit 20.

Funada, however, does not have a "delivery pile" provided downstream of the printing machine 1, and thus the chain 22 is not "provided above the delivery pile" as recited in claim 1. Accordingly, Funada does not disclose or even suggest the "second delivery chain" as recited in claim 1.

Moreover, Funada only has a single chain 22 that carries the printed sheets from the printing machine 1 to the paper discharge unit 20, and does not have "a plurality of transport cylinders for transporting said sheet-like material from said first delivery chain to said second delivery chain and provided at a position higher than the first delivery chain and lower than the second delivery chain, said plurality of transport cylinders include a first transport cylinder and a second transport cylinder provided adjacent to the delivery pile and arranged in zigzag fashion with respect to a vertical direction," as recited in claim 1. Accordingly, Funada does not disclose or even suggest the "plurality of transport cylinders" as recited in claim 1.

Uno discloses two inspection cylinders 12, 13. But these inspection cylinders are provided upstream of a printing apparatus 4 with respect to the direction of transport of a sheet. The printing press of Uno inspects whether the quality of a printed product is good or poor before printing with a device for additional printing of numbers, etc. Such printing press is totally different from the claimed printing machine of the present application, which inspects the opposing faces of a sheet during a period from the printing of the opposing faces of the sheet until delivery of the sheet to the delivery pile.

Moreover, the two inspection cylinders of Uno are disposed in a zigzag fashion in a vertical direction. However, the sheet is received at an upper side of the upper inspection cylinder 12, transported downward by the two inspection cylinders, and transferred at a lower side of the lower inspection cylinder 13 to the transport chain 20.

Therefore, Uno does not have "a plurality of transport cylinders for transporting said sheet-like material from said first delivery chain to said second delivery chain and provided at a position higher than the first delivery chain and lower than the second delivery chain, said plurality of transport cylinders include a first transport cylinder and a second transport cylinder provided adjacent to the delivery pile and arranged in zigzag fashion with respect to a vertical direction," as recited in claim

1. Accordingly, Uno does not disclose or even suggest the "plurality of transport cylinders" as recited in claim 1.

Reinhard discloses two transport cylinders 17, 18 installed above a delivery pile. With this arrangement, a large space is required above the delivery pile. Moreover, an inspection apparatus is provided at a high position, thus rendering maintenance more difficult.

In the claimed invention of the present application, the plurality of cylinders is "provided at a position higher than the first delivery chain and lower than the second delivery chain," as recited in claim 1. Because of this arrangement, the sheet-like material is received from the first delivery chain at a lower side of the plurality of transport cylinders, transported upward by the plurality of transport cylinders, and transferred to the second delivery chain at an upper side of the plurality of transport cylinders. This has an advantage that double-sided inspection of the sheet can be conducted without inducing enlargement of the installation space or an increase in the entire length of the printing machine.

In summary, Reinhard fails to disclose or even suggest such "plurality of transport cylinders" as recited in claim 1.

Therefore, even assuming, *arguendo*, that Funada, Uno, and Reinhard can be combined, Funada in view of Uno and Reinhard fails

to disclose or even suggest the "plurality of transport cylinders" as recited in claim 1.

Claim 3, dependent on claim 1, is allowable at least for its dependency on claim 1.

Claim 6 is allowable at least for the similar reasons as stated in the foregoing with respect to claim 1. More specifically, Funada in view of Uno and Reinhard fails to disclose or even suggest "a first transport cylinder and a second transport cylinder provided at a position higher than the first delivery chain and lower than the second delivery chain and adapted to transport the sheet-like material from the first delivery chain to the second delivery chain, the first transport cylinder and the second transport cylinder being arranged in zigzag with respect to a vertical direction, such that a first space is formed above the first transport cylinder, and a second space is formed below the second transport cylinder," as recited in claim 6.

Claims 7 and 8, dependent on claim 6, are allowable at least for their dependency on claim 6.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

(b) Claims 4-5 and 9-10 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Funada in view of Uno and

Reinhard, and further in view of Giori (USP 4,794,856). This rejection is respectfully traversed.

Claims 4 and 5, variously dependent on claim 1, are allowable at least for their dependency on claim 1.

Claim 9, dependent on claim 6, is allowable at least for its dependency on claim 6.

Independent claim 10 claims "a plurality of transport cylinders, provided at a position higher than the first delivery chain and lower than the second delivery chain, for transporting said sheet-like material from said first delivery chain to said second delivery chain, said plurality of transport cylinders including at least a first transport cylinder and a second transport cylinder," which is similar to the "plurality of transport cylinders" recited in claim 1.

Therefore, at least for the similar reasons as stated in the foregoing with respect to claim 1, Funada, Uno, and Reinhard fails to disclose or even suggest the "plurality of transport cylinders" recited in claim 10.

Giori discloses an ultraviolet lamp 24 for drying a sheet transported by a cylinder 23. Giori, however, does not have "a plurality of transport cylinders" as recited in claim 10.

Therefore, even assuming, *arguendo*, that Funada, Uno, Reinhard, and Giori can be combined, Funada in view of Uno, Reinhard, and

Giori fails to disclose or even suggest the "plurality of transport cylinders" as recited in claim 10.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

New Claim

New claim 11 has been added.

Claim 11 is allowable at least because none of the prior art of record discloses or even suggests "a third transport cylinder located downstream of said second transport cylinder in the direction of transport of said sheet-like material so as to be opposed to and in contact with said second transport cylinder," as recited therein.

A favorable determination and allowance of claim 11 is earnestly solicited.

Conclusion

Accordingly, in view of the above amendments and remarks, reconsideration of the rejections and allowance of the pending claims in the present application are respectfully requested.

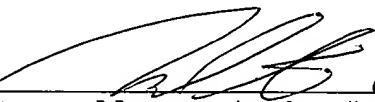
The Examiner is respectfully requested to enter this Reply After Final in that it raises no new issues. Alternatively, the Examiner is respectfully requested to enter this Reply After Final in that it places the application in better form for Appeal.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Maki Hatsumi (Reg. No. 40,417) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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